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IDENTIFICATION WITH VIRTUAL TEAMS

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Abstract

Virtual teams, that is groups of people striving toward a common goal, dispersed across many locations, and communicating with each other predominantly via information and communication technology have become increasingly common forms of organizing work. Globalization, the need to be near customers and the rapid development of technology have enabled and driven this development. The number of studies on virtual teams is increasing but many phenomena are still understudied, especially in real-life settings.

In this dissertation I have chosen to investigate the dynamics of social identification with virtual teams. Identification has often been put forward as a major success factor for virtual teams because it has been claimed to provide a sense of belonging despite the relative lack of face-to-face interaction. In order to shed more light on identification in this organizational context I have concentrated on the concepts of perceived justice and interpersonal trust and theories that link identification with them. I have also studied many relevant structural variables which are typical in virtual teams.

I studied real-life virtual teams in all the four original articles of this dissertation. The data consisted of subsamples from two questionnaires; altogether 42 virtual teams and 302 team members were included. The cross-sectional data were analyzed quantitatively.

The findings gave strong support to the importance of perceived justice, especially perceived procedural justice in the development of shared virtual team identity. Moreover, identity was found to be a strong motivational force which mediated the effects of justice perceptions on outcome variables. Such structural factors as the lack of face-to-face interaction and geographical dispersion were found to create uncertainty within virtual teams and moderate the relationship between procedural justice and identification. The fewer face-to-face meetings there were and the higher the geographical dispersion, the stronger the uncertainty which, in turn, forced team members to increase their search of identity cues from procedural justice judgments. Finally, it was found that both strong identification and high levels of trust are needed at the same time to predict virtual team effectiveness.

Keywords	Virtual teams, social identification, perceived justice, trust		
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Työn ohjaaja Professori Jukka Lipponen

Tiivistelmä

Virtuaalitiimit eli ryhmät ihmisiä, jotka työskentelevät yhteisen päämäärän eteen hajautuneina moneen paikkaan ja viestien keskenään pääasiallisesti tieto- ja kommunikaatioteknologisin välinein, ovat yleistyneet laajasti työn organisoinnin uutena muotona. Tätä kehitystä ovat edistäneet ja sen ovat mahdollistaneet globalisaatio, yritysten tarve olla lähellä asiakkaitaan ja teknologinen kehitys. Tutkimustietoa virtuaalitiimeistä kasautuu jatkuvasti, mutta monet ilmiöt ovat edelleen varsin puutteellisesti tutkittuja erityisesti todellisesta työelämästä saaduilla aineistoilla.

Tässä väitöskirjassa olen tutkinut sosiaalisen identifikaation eli samastumisen dynamiikkaa virtuaalitiimeissä. Ryhmän jaettua identifikaatiota pidetään yleisesti keskeisenä virtuaalitiimien menestystekijänä, koska se luo yhteenkuuluvuuden tunnetta, vaikka perinteisiä tapaamisia on vähän. Valottaessani identifikaation syntyä ja seurauksia olen keskittynyt erityisesti koetun oikeudenmukaisuuden ja luottamuksen käsitteisiin sekä teorioihin, jotka linkittävät nämä identifikaatioon. Olen tutkinut myös useiden virtuaalitiimeille tyypillisten rakennetekijöiden merkitystä tässä kontekstissa.

Tämän väitöskirjan pohjana olevissa neljässä artikkelissa olen tutkinut todellisen työelämän virtuaalitiimejä kvantitatiivisesti poikkileikkausasetelmissa. Artikkelien aineistot koostuvat kahden kyselyn datan osista aineistonkeruun eri vaiheissa. Kaikkiaan tutkittiin 42 virtuaalitiimiä ja niiden 302 jäsentä.

Tulokset antavat vahvaa tukea erityisesti menettelytapojen koetun oikeudenmukaisuuden oletetulle merkitykselle sosiaalisen, ryhmässä jaetun identifikaation synnyssä. Identifikaation havaittiin olevan vahva motivaatiotekijä, joka toimi välittäjänä oikeudenmukaisuuden vaikutuksille tiimityössä. Rakennetekijöistä erityisesti kasvokkaistapaamisten puute ja maantieteellinen hajautuneisuus synnyttivät epävarmuutta tiimeissä, mikä puolestaan johti menettelytapojen koetun oikeudenmukaisuuden tärkeyden korostumiseen identifikaation lähteenä. Lisäksi havaittiin, että virtuaalitiimien tehokkuuden edellytys on samanaikainen vahva identifioituminen tiimiin ja korkea luottamus tiimin jäsenten välillä.

Asiasanat Virtuaalitiimit, sosiaalinen identifikaatio, koettu oikeudenmukaisuus, luottamus

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During the past five years, the time I have learned to write academic text, the endless patience, razor-sharp comments and co-authorship of my instructor and friend Professor Jukka Lipponen have been invaluable. My supervisor Professor Matti Vartiainen has trusted me (even when I didn't) and provided me with all the necessary resources to complete this dissertation. I am also indebted to my insightful and meticulous pre-examiners, Professor Steven Blader and Professor Pamela Hinds for their help in the finishing touch.

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I wish to express my gratitude to The Finnish Work Environment Fund, which has provided financial support for my writing. Same applies to the numerous organizations which have helped in data collection in one way or another and made my studies possible.

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Last but not least – here I feel that words escape me – I would not have achieved anything without my family, that is my dear wife Anu and my lovely daughters Emma and Sanni. You have tolerated my absence, both mental and physical. More than that, Anu has always read my manuscripts and commented them wisely. I remain waiting for your dissertation. Despite all the strains and discomfort I hope that my – undoubtedly from their current viewpoint rather weird – endeavor has taught Emma and Sanni that all goals can be reached.

Helsinki, January 2010

Marko Hakonen

List of Publications

The dissertation consists of an overall summary and the following original articles:

I. Hakonen, M. & Koivisto, S. (2008). Antecedents of identity in virtual teams. *Nordic Organization Studies*, 2/08, 54-73.

II. Hakonen, M. & Lipponen, J. (2007). Antecedents and consequences of identification with virtual teams: Structural characteristics and justice concerns. *The Journal of E-working*, 1, 137-153.

III. Hakonen, M. & Lipponen, J. (2008). Procedural justice and identification with virtual teams: The moderating role of face-to-face meetings and geographical dispersion. *Social Justice Research*, 21, 164-178.

IV. Hakonen, M. & Lipponen, J. (2009). It takes two to tango: The close interplay between trust and identification in predicting virtual team effectiveness. *The Journal of eWorking*, 3, 17-32.

Table of contents

1. INTRODUCTION 3

1.1 AIM, RESEARCH STRATEGY AND RESEARCH QUESTIONS 4

2. VIRTUAL TEAMS AND VIRTUALITY 6

3. IDENTIFICATION, JUSTICE AND TRUST – THE KEY CONSTRUCTS OF THIS DISSERTATION 8

3.1 THE SOCIAL IDENTITY APPROACH 8

3.2 ORGANIZATIONAL JUSTICE 12

3.3 TRUST 15

3.4 LINKS BETWEEN IDENTITY, JUSTICE AND TRUST 16

4. METHODS 17

4.1 DATA AND PROCEDURES 18

4.2 MEASURES 20

5. RESULTS 21

5.1 ARTICLE 1: STRUCTURAL AND JUSTICE ANTECEDENTS OF IDENTIFICATION 21

5.2 ARTICLE 2: TESTING THE MEDIATION HYPOTHESIS OF THE GROUP ENGAGEMENT MODEL IN VIRTUAL TEAMS 23

5.3 ARTICLE 3: HOW DO FACE-TO-FACE MEETINGS AND GEOGRAPHICAL DISPERSION MODERATE THE RELATIONSHIP BETWEEN PROCEDURAL JUSTICE AND IDENTIFICATION? 24

5.4 ARTICLE 4: THE INTERPLAY OF TRUST AND IDENTIFICATION IN PREDICTING VIRTUAL TEAM EFFECTIVENESS 25

6. DISCUSSION 27

6.1 SUMMARY 27

6.2 SOME CRITICAL CONSIDERATIONS AND FUTURE DIRECTIONS 31

6.3 CONCLUSION 35

REFERENCES 36

APPENDIX I: ANTECEDENTS OF IDENTITY IN VIRTUAL TEAMS

APPENDIX II: ANTECEDENTS AND CONSEQUENCES OF IDENTIFICATION WITH VIRTUAL TEAMS: STRUCTURAL CHARACTERISTICS AND JUSTICE CONCERNS

APPENDIX III: PROCEDURAL JUSTICE AND IDENTIFICATION WITH VIRTUAL TEAMS: THE MODERATING ROLE OF FACE-TO-FACE MEETINGS AND GEOGRAPHICAL DISPERSION

APPENDIX IV: IT TAKES TWO TO TANGO: THE CLOSE INTERPLAY BETWEEN TRUST AND IDENTIFICATION IN PREDICTING VIRTUAL TEAM EFFECTIVENESS

1. Introduction

During the past 15 years, globalization, the need for flexibility, and the opportunities provided by information and communication technology (ICT) have paved the way for the proliferation of new organizational forms, such as virtual teams (e.g., Vartiainen, 2006). A virtual team (VT) is often described as a group of people striving toward a common goal, dispersed across many locations, and communicating with each other predominantly via information and communication technology (e.g., Axtell, Fleck, & Turner, 2004). Moreover, the need of organizations to let their experts or sub-teams of them work near customers around the globe are often mentioned as the major driving force behind the increased use of VTs in working life (Vartiainen, 2006). The literature on VTs has been growing rapidly, but as recent reviews argue (Hertel, Geister, & Konradt, 2005; Martins, Gibson, & Maynard, 2004), there is still amazingly little empirical research, especially on real-life teams. Hence, this new organizational form provides a fresh context for theory testing and building.

I have made the concept of identification, that is, the sense of belonging to a group, the central focus of investigation in my dissertation. Many authors have stressed that the formation of a shared team identity is crucial for virtual teams because it provides a sense of belonging despite the relative lack of face-to-face interaction (Fiol & O'Connor, 2005; Mortensen & Hinds, 2001; Wiesenfeld, Raghuram, & Garud, 1999). Even though Martins et al. (2004) claim that identification is among those group processes that have been relatively often studied, Fiol and O'Connor (2005) stress that these studies are far from exhaustive. Therefore, there is certainly potential for further enlarging knowledge and understanding of identification with VTs.

I have selected the other key concepts in this dissertation, that is, perceived justice and interpersonal trust, from among the plethora of possible constructs which might shed light on identification with VTs on the basis of two criteria. First, I have striven for theoretical coherence in selecting the variables for the studies. Second, I have focused on the constructs in the virtual context which are arguably proximal to that of identification. These arguments are refined in Section 3.

A concept that the two major reviews (Hertel et al., 2005; Martins et al., 2004) fail even to list as a topic of current or further VT research is perceived justice. Furthermore, to my knowledge there has been only one study of justice perceptions in VTs (Kurland & Egan, 1999) before the articles presented in this dissertation. This is rather surprising given the fact that perceived justice has been found to be an important factor influencing various work outcomes, such as organizational commitment, extra-role behaviors, turnover intentions, stress, health and unit-level performance (see Greenberg & Colquitt, 2005). Furthermore, the theoretical treatment of perceived fairness in this dissertation links it closely to identification. Hence, it is high time to study how justice and identification interplay in this new organizational form.

Trust has been claimed to be important in VTs because direct control is impeded due to distance. Numerous authors have suggested that control must be at least partially substituted by trust in VTs (e.g., Aubert & Kelsey, 2003; Jarvenpaa & Leidner, 1999; Tyler, 2003). Moreover, it has often been stated that trust is a key success factor and the "glue" that binds VTs together (e.g., Nemiro, 2000). Trust is also closely related to identification and justice. In fact, it sometimes overlaps, especially the concept of perceived justice (Lewicki, Wiethof, & Tomlinson, 2005).

The articles presented in the appendices deal also with many other relevant variables, such as extra-role behaviors, effectiveness and many structural variables. The reasoning behind their selection and the main storyline of the original articles is described in Section 5 (Results).

1.1 Aim, research strategy and research questions

My main aim in preparing this dissertation has been to shed new light on identification with VTs in four studies. I have tried to do this by focusing carefully on a limited number of presumably relevant variables in each study and by scrutinizing their interplay with and relationships to identification. My approach could be called social psychology of organizations (see Haslam, 2004). I have brought social psychological theories which have been commonly applied to other organizational settings to the

realm of VTs. Here my inspiration stems from the conclusion of Martins et al. (2004), who emphasize that VTs are essentially teams and that researchers should "*draw on theoretical foundations ... utilized in prior research on teams*" (p. 823). I have also tried to respond to the challenge of those scholars to seek out what is new and unique to VTs by focusing on variables and on moderations (see Martins et al., 2004) that might reveal some unanticipated associations. The method in all four articles is quantitative analysis of cross-sectional survey data.

Each of the original articles answers one of the following general research questions:

RQI How are justice variables and contextually relevant structural variables related to identification with VTs? (Article 1 in Appendix I)

RQII Is the social identity mediation hypothesis derived from the group engagement model of justice transferable to VTs and what is the role of task interdependence? (Article 2 in Appendix II)

RQIII How does the number of face-to-face meetings of a team and its geographical dispersion moderate the relationship between procedural justice and identification? (Article 3 in Appendix III)

RQIV How do trust and identification interplay in predicting VT effectiveness? (Article 4 in Appendix IV)

Hereinafter I refer to the original articles following their order in the Appendices. The article presented in Appendix I is referred to as Article 1 and so forth. The structure of this dissertation overview is as follows: I start with a discussion on VT prevalence and definitions (Section 2). In Section 3 the three most central concepts in this dissertation, namely identification, justice and trust are explained in detail. This is followed by a description of data and methods (Section 4) with special attention to matters omitted from the original articles due to limited space. The results section (Section 5) is dedicated to a summary of the hypotheses and results of each original article. Finally, the general discussion in Section 6 begins with a summary of the main results, proposing answers to the respective research questions and outlining the main contributions. The rest of that section is dedicated to a critical discussion of the

research, pointing out further directions for research and discussing the limitations of this dissertation before making some concluding comments.

2. Virtual teams and virtuality

VT researchers have studied many VT relevant variables. Some of them are better covered than others, but very few of them, if any, can be said to have reached the level of robust academic understanding (Hertel et al., 2005; Martins et al., 2004). Martins et al. (2004) note in their review that often neglected variables include, for instance, diversity, team size, monitoring and knowledge management. The better studied constructs include technology, cohesion and member satisfaction. However, overall, the field of academic VT research is still extremely fragmented.

As noted above, virtual teams have become an increasingly common way of organizing work. Gibson and Gibbs (2006) present an estimate based on a Gartner Group study from the year 2002 according to which "*more than 60 per cent of professional employees work in teams characterized by virtuality*" (p. 451). Hertel et al. (2005) refer to a German survey which suggests that about 40 per cent of business managers have worked in a VT. Considering the fact that these figures are not fully up to date, it is reasonable to argue that VTs have such an importance in modern working life that their empirical study is clearly justified. Furthermore, rigorous investigation of VTs from the viewpoint of organizational psychology (or any other discipline) has the potential to disclose novel insights.

What then are VTs and virtuality? One of the basic debates in the literature concerns the proper definition of VT and virtuality (Gibson & Gibbs, 2006). According to recent reviews (Hertel et al., 2005; Martins et al., 2004), it is a common notion that virtuality is a matter of degree. Indeed, there are more and less virtual teams, and I also share the view that virtuality should be seen as a continuum rather than as an absolute state.

In the debate on accurate definition, different authors specify different attributes of VTs as definitional (Martins et al., 2004). It is rather clear that for a VT to be a team it

should consist of more than one person collaborating to achieve a common goal (e.g., Hertel et al., 2005). Most authors propose (e.g., Bosch-Sijtsema, 2003; Hertel et al., 2005; Maznevski and Chudoba, 2000) that for a team to be virtual at least one of its members must work in a different location from the others. This is a minimal condition for geographical dispersion which Gibson and Gibbs (2006) specify as one definitional characteristic of VTs in their recent article. Moreover, VTs are often characterized by the fact that members communicate with each other mainly through ICT (e.g., Axtell et al., 2004). Gibson and Gibbs (2006) call this dimension "electronic dependence". This dimension can also be viewed in the way I have adopted in this dissertation: the stronger the electronic dependence the lower the number of a VT's face-to-face meetings. This operationalization can be argued to be better than counting electronic interactions in placing teams along a co-located-virtual continuum, because some empirical evidence suggests (e.g., Griffith and Neale, 2001) that co-located teams may use as much or even more ICT in their communication than members of VTs. Many authors also include other features, such as crossing temporal, cultural, and organizational boundaries or dynamic structure, in their definitions of VTs (see Gibson & Gibbs, 2006, for review). Another fruitful way to view these different features of VTs is to consider them as components of contextual complexity (Vartiainen, 2006). Each feature forms a continuum from non-existence to maximal. The further any of the components is placed along a continuum, for instance geographical dispersion, the harder it is for a VT to cope with that issue.

Except in Article 1 I do not take a stance in the ongoing debate on what features or attributes of VTs are definitional or what constitutes the core of virtuality. I have called the interesting and obviously typical features of VTs structural variables.

Finally, it has been noted that the word virtual is linguistically problematic due to its connotation of something that does not really exist. Consequently, many scholars have used other terms, like distributed teams or workgroups (see e.g., Hinds & Kiesler, 2002). Nevertheless, I use the term VT throughout this dissertation because it was used in the titles of all the four original articles.

3. Identification, justice and trust – the key constructs of this dissertation

In this section I will clarify and open up the major theoretical constructs of this study in order to help the reader to orient to the central theories on the basis of which I have developed the central arguments of this dissertation beyond the limited space of the articles. First, I introduce the social identity approach since it is central to all the four articles. Second, I shed some light on the social psychological research tradition on perceived justice because it is another focal point in the empirical studies presented in this dissertation. Furthermore, the theories of perceived justice I have used are deeply rooted in the social identity approach – a point that brings out my particular concern for theoretical coherence. Third, I take a brief glance at the concept of trust and its study in VTs. Other concepts with lesser importance in this dissertation will be briefly introduced in the Results section.

3.1 The social identity approach

The concept of social identity and the social identity approach (SIA) are the cornerstones of this dissertation. As noted in all the articles the SIA provides a theoretical framework for the relationship between the individual and the group. Specifically, it consists of two distinct theories: the original social identity theory (SIT; e.g., Tajfel & Turner, 1979), and the more recent self-categorization theory (SCT; e.g., Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). Despite certain differences, both theories share the same fundamental assumption that individuals define themselves in terms of their social group memberships and that this group-defined self-perception produces distinctive effects on social behavior and inter-group relations (Hogg & Abrams, 1988). This means that the more an individual conceives of him or herself in terms of membership of a group, or, in other words, identifies with the group, the more his or her attitudes and behavior are governed by this group membership (Hogg & Abrams, 1988).

In a broader social psychological discourse the origins of the SIT can be traced to endeavors to challenge the limits of the traditional individualistic tradition in social

psychology (e.g., Tajfel & Turner, 1979). This traditional approach has gained dominance since the early days of social psychology in explaining group and collective phenomena (Haslam, 2004). The basic premise of this vein of thinking is that group processes are to be explained in terms of the traits, needs, skills and abilities of individuals. An interesting adherent of this approach was Taylor with his principles of scientific management (1911; ref. Haslam, 2004). Taylor argued that workers' potential for laziness will be emphasized in groups. Hence, the keys to effective organization and management are the selection of the most skilled individuals and the organization of work into small units so as to inhibit the formation of ineffective groups. The list of corresponding examples in social and organizational psychology is long and impressive (see e.g., Haslam, 2004).

Tajfel and his colleagues started to investigate group processes from a different point of view, namely consideration of how group memberships affect the behavior and the self-definition of the individual members (Haslam, 2004, Tajfel & Turner, 1979). They were able to demonstrate that a random distribution of individuals into groups produced, for instance, in-group favoritism even when no realistic conflict between the groups was present. These minimal group studies led to the conclusion that very minimal social cues of belonging to a group can have meaning for individuals to such an extent that it affects their attitudes and behavior. This social categorization ("I am a member of group X") led to positively valued social identity as a group member. Consequently, Tajfel (1974) defined social identity as "*that part of an individual's self-concept which derives from his membership of a social group together with the emotional significance attached to that membership*" (p. 69). This link to self makes social identification a strong motivational force.

In spite of the basic distinction in SIT between personal and social or group level identification, the theory remained somewhat unclear as to cognitive processes that activate and make salient either personal or social identification, or something in between these two extremes (Haslam, 2004). SCT offers clarifying account of this matter (Tajfel & Turner, 1979; Turner et al., 1987). One of the key psychological processes outlined in SCT is depersonalization. This means the degree to which self is

merged with other group members. When people categorize themselves at the personal level, they are motivated to do things which promote their personal identity as individuals (e.g., personal advancement). When categorization and social identity are salient, it is associated with a motivation to do things which promote individuals' social identity as group members, for example, through cooperation and enhancement of group goals. The underlying cognitive principles of the self-categorization which determine the direction of categorization and consequent identification are well specified in SCT but not crucial for the purposes of this introduction (see Haslam, 2004; Turner et al., 1987).

Even though SIT and SCT were originally developed to explain inter-group relations and especially discrimination, the article by Ashoforth and Mael (1989) brought the SIA to the realm of organizations. During the past 20 years the SIA has been applied in order to unravel many organizational psychological phenomena, such as leadership (e.g., Lipponen, Koivisto, & Olkkonen, 2005), organizational justice (e.g., Tyler & Blader, 2000) and organization citizenship behavior (e.g., Van Dick, Grojean, Christ, & Wieseke, 2006). The use of this approach has increased so dramatically that the SIA can be currently described as one of the main stream theories of organizational psychology (see e.g., Haslam, 2004). The meta-analyses reveal that social identification is correlated with a broad range of organizationally relevant and (often) positive attitudes and behaviors (Riketta, 2005). It should be noted here that the above-described original formulations of SIT and SCT were situational, emotional as well as cognitive, and dependent on social interaction (see Haslam, 2004; Tajfel & Turner, 1979). This is worth remembering, because in their article Asforth and Mael (1989) distanced themselves from the to original formulations and presented social identity as a purely cognitive construct. They defined organizational identification as *"the perception of oneness with or belonging to a group"* (p. 34).

In order to place and frame the SIA some distinctions are helpful. First, one should note that it is certainly not the only way to tackle identification and organizations. Perhaps the most influential and closest alternative stream of identity research in organizations is based on a more "sociological" formulation of the concept. Specifically, in their seminal

article Albert and Whetten (1985) consider identity to stem from organization, specifically from its central, distinctive and enduring characteristics. In this approach the organization and images formed of it are the building blocks of identification. The difference from the SIA is clear. The SIA focuses on social identity, that is on psychological processes occurring within individuals in groups whereas the organizational identity approach clearly gives precedence to organizations and the processes and discourses within and outside them. Second, even though in this dissertation the terms identity and identification are used interchangeably, from the viewpoint of other streams of identity research this would be misleading. Identity can be viewed as a state whereas identification can be seen as a process (see Ashforth, Harrison, & Corley, 2008). Third, the concepts of organizational identity and organizational commitment are often mixed. This is understandable for many reasons. The most common definition of organizational commitment describes it as "*the relative strength of an individual's identification with and involvement in a particular organization*" (Mowday, Steers, & Porter, 1979: 226). However, commitment is a positive attitude towards an organization (or team) and lacks the reference to self-definition which identification has when it is treated in terms of the SIA (Ashforth et al., 2008). Still, the strikingly similar patterns of correlation with other variables for both commitment and identification justifies some suspicion as to the fundamental differences between these two constructs.

Why then use the SIA in this dissertation? The reasons are threefold, the first and second having been mentioned above. The SIA provides a coherent theoretical lens to look at multiple organizationally relevant phenomena and research has shown identification to be strongly associated to important positive outcomes at different levels (group, organization). Moreover, the SIA, is – at least to me – compelling because it provides a coherent (meta)theory and succeeds in linking group-level phenomena to individual psychological processes without giving either of them ontological priority. The third reason is that the importance of VT identification for the success of the team is widely recognized in the literature even though empirical evidence of its relations to other concepts is not yet very well covered (Fiol & O'Connor, 2005). This is a source of potential novelty.

This last point deserves some further clarification. Many VT researchers emphasize and agree that identification is especially important in virtual settings because it provides a sense of belonging despite the relative lack of face-to-face interaction (Fiol & O'Connor, 2005; Gibson & Cohen, 2003; Hinds & Kiesler, 2002). However, Fiol and O'Connor (2005) conclude that due to the limited number of empirical studies "*we know very little about the interrelationships among individual, group and situational factors in the development of identification in virtual teams*" (p. 20). This does not mean that there are no relevant and important studies. Mortensen and Hinds (2001) found that shared team identity was associated with less conflict in new product development teams but that the level of identification was the same in co-located and distributed teams. Moreover, Wiesenfeld, Raghuram and Garud (1999) found in their seminal study that virtual (or rather remote) workers built their identification on electronic communication to a greater extent than their less virtual counterparts. They also found that the frequency of face-to-face communication had no main effect on identification. Recently, Sivunen (2006) found that VT leaders used four tactics to enhance VT members identification trough computer-mediated communication. Furthermore, Bartel, Wrzesniewski and Wiesenfeld (2008) found in a field study of a large technology firm that recently hired remote workers had problems in identifying with their organization largely because they were not familiar with other employees and had to rely on electronic communication. The last two studies reveal some contradictions: Sivunen (2006) found that electronic dependence constituted no real impediment to identification whereas the results of the Bartel et al. (2008) study suggested the opposite to be true.

3.2 Organizational justice

Here justice refers to a long research tradition within social psychology studying what persons perceive to be fair or unfair and how they react to this. This tradition started from studies in legal settings but has recently been applied rather extensively to the organizational context (Colquitt, Greenberg, & Zapata-Phelan, 2005). The term organizational justice simply refers to applying the theories of justice research to organizations.

Organizational justice literature generally distinguishes between three types of justice (Greenberg & Cropanzano, 2001). *Distributive justice* refers to fairness perceptions of an outcome of any organizational resource allocation (Deutsch, 1985). *Procedural justice* means the perceived fairness of formal decision-making procedures and principles (Lind & Tyler, 1988) or, in other words, the quality of decision making (Tyler & Blader, 2000). *Interactional justice*, in turn, refers to dignity, politeness, and respect, which are communicated informally during decision-making or other interpersonal encounters (Bies & Moag, 1986), that is the quality of interpersonal treatment (Tyler & Blader, 2000). Recently some justice scholars have divided interactional justice into two sub-concepts. (Greenberg, 1993). These are interpersonal justice, which refers to treatment by supervisors or colleagues, and informational justice, which covers essentially the quality of the explanations of a person who is responsible of any decision (see e.g., Collquitt et al., 2005).

In the original articles of this dissertation we concentrate especially on procedural justice. The historical origins of most conceptualizations and operationalizations of procedural justice can be traced to the justice rules developed by Leventhal (1980). According to Leventhal (1980) people use six rules when they judge the fairness of decision-making procedures. The rules highlight the importance of accuracy of information, correctability, bias-suppression, consistency, representativeness and ethicality in the decision-making process.

After many years of research, it is now well-acknowledged that employees' perceptions of organizational justice are critical factors influencing various important work outcomes, such as organizational commitment, job satisfaction, organizational citizenship behavior and turnover intentions (see Cohen-Charash & Spector, 2001 and Colquitt, Conlon, Wesson, Porter, & Ng, 2001, for reviews). Given these important consequences of perceived justice, researchers have been trying to explain why people care about justice. For the effects of distributive justice, the dominant explanation has focused on the positive economic consequences that fair outcomes have (Folger & Cropanzano, 1998). That is, fair outcomes are valued because they are closely related to favorable outcomes. In early research, this instrumentally based explanation was also

offered for the procedural justice effects. According to this self-interest model of procedural justice, fair procedures are valued because they ultimately lead to favorable outcomes (Lind & Tyler, 1988, Colquitt et al., 2005).

In contrast to the self-interest model an alternative explanatory framework was provided by so called relational theories of fairness. An early example of these theories is the group-value model of justice (Lind & Tyler, 1988), which emphasizes identity-relevant motivations behind the concern with fair procedures. The model suggests that procedural justice matters because it conveys identity relevant information to group members. A more recent development based on same vein of reasoning is the group engagement model (GEM) developed by Tyler and Blader (2003). They argue, as in the group-value model, that justice perceptions should affect identification given the positive social-identity-relevant information that justice communicates to individuals. More specifically, justice communicates to individuals that they are respected members within their group, and that they can be proud of their group membership. Furthermore, through its link to these feelings of respect and pride, it should be further related to increased identification with the group (Tyler & Blader, 2003). This relationship develops because people are more highly motivated to merge their identity with a group when the group has high status (pride), when they feel they have status in the group (respect). Pride and respect engender identification with the group in people's motivated attempts to develop and maintain a positive social identity (Tyler & Blader, 2003). A central suggestion of GEM is the so-called "social identity mediation hypothesis" (see also Colquitt et al., 2005; Blader & Tyler, 2005). It proposes that identification conveyed by procedural fairness in the group mediates the relationship of procedural justice perceptions and positive organizational outcomes such as extra-role behaviors. In Article 2 we specifically test the applicability of this mediation hypothesis to VTs.

The same question put forward about identity can be asked about justice. Why study it here? Again my answer is threefold. The first and second parts I have hopefully demonstrated above. Justice and especially the relational models of it that are used here are firmly anchored to the construct of social identity – the key concept of all the articles in this dissertation. Moreover, like identity, perceived procedural justice has

been shown to have many important effects in the groups beyond identity. Finally, justice is clearly understudied in the context of VTs and might be a source of novel insights. This last point is expanded below.

To my knowledge, only Kurland and Egan (1999) studied fairness in virtual settings before the original articles of this dissertation. Their pioneering work investigated how telecommuting and structural factors of organization such as outcome-based performance evaluation, formality of communication, and job formalization were related to the justice perceptions of telecommuters. Among other things, they found that telecommuting and informal communication were positively related to procedural justice. They suggest that these results were partly attributable to active supervisory communication and decision justification, especially via e-mail. Telecommuting and telework are synonyms referring to a flexible individual work arrangement in which employees spend some of their working time outside their conventional workplace (Nilles, 1994). Telework, unlike VTs, does not presuppose teamwork toward a common goal. Thus, Kurland and Egan's (1999) study might not fully inform us about the potentially special group-level dynamics of virtual teamwork. The same consideration may limit the applicability of the results of the identification studies of remote workers by Wiesenfeld et al. (1999) and Bartel et al. (2008) to VTs (see Section 3.1).

3.3 Trust

In this dissertation (Article 4) I have investigated trust within VTs (interpersonal trust) from the social psychological perspective. In line with Boon and Holmes (1991) I defined trust as a psychological state involving confident positive expectations about another's motives with respect to oneself in situations which entail risk.

Trust in organizations has been a topic of growing interest to researchers (e.g., Kramer & Tyler, 1996). Generally, most authors seem to agree that trust is beneficial for organizations (Dirks & Ferrin, 2001). Several studies have demonstrated that trust has multiple positive outcomes in organizations ranging from increased commitment to organizational citizenship behaviours (see e.g., Dirks & Ferrin, 2002). According to

Bijlsma and Koopman (2003), it is also commonly agreed that trust is positively related to cooperation. It has been noted that trust becomes more important and even partially replaces traditional mechanisms of control in new virtual work settings (Tyler, 2003). Direct control is strongly impeded due to distance, but coordination and cooperation are indispensable in VTs for the team to achieve its shared goal.

Consequently, trust has been one of the more studied constructs for VT researchers (e.g., Aubert & Kelsey, 2003; Zolin, Hinds, Fruchter, & Levitt, 2004). In their seminal study of VTs comprised of students from different countries, Jarvenpaa and Leidner (1999) found that, among other things, proactive, predictable communication and social cues in computer-mediated communication were keys to high interpersonal trust within the teams. They suggest that trust in virtual settings is swift and fragile. Meyerson, Weick and Kramer (1996), who developed the concept of swift trust, suggested that swift trust develops depersonally. If the common task requires trust, but the parties do not have time to become acquainted with each other, trust is built on role-based interaction and prototypical categorizations.

3.4 Links between identity, justice and trust

Taken together, insofar as earlier research in virtual and other settings is not severely challenged, the constructs of perceived justice and interpersonal trust should be closely linked to social identification with VTs. First, GEM states that especially procedural justice is a building block of identity. Second, since both trust and identification are claimed to be crucial for VT success, it is reasonable to assume that they are somehow intertwined. Therefore, scrutiny of the interplay of VT identification with justice and trust was made the central concern of this dissertation.

Going beyond the VT context, the meta-analyses on identity (Riketta, 2005) and on organizational justice (Cohen-Charash & Spector, 2001; Colquitt et al., 2001) do not inform us about interconnections between identity and procedural justice. However, some empirical studies which apply similar conceptualizations as I have used in this dissertation give a clue on the strength of the links between these two constructs.

Studies by Blader and Tyler (2009) and Lipponen, Olkkonen and Moilanen (2004) report correlations between procedural justice and identification which are around .45 level, that is rather high. Furthermore, meta-analyses and studies (e.g., Blader & Tyler, 2009; Colquitt et al., 2001) report correlations for the identification-extra-role behaviors link that range between .15 to .39 and show that social identity mediates the effects of procedural justice especially on extra-role behaviors. The studies on the relationships between identification and trust as well as between justice and trust are more rare but as Lewicki, Wiethoff and Tomlinson (2005) note, researchers have treated justice and trust often as almost overlapping constructs. Hence, these two constructs are very closely linked. In fact, a comparison of some procedural justice and trust scales reveals that they have sometimes been operationalized amazingly similarly (see e.g., Tyler, 2003 and Tyler & Blader, 2000).

Even though the key constructs of this study seem to be closely linked, the virtual context might affect the way people perceive justice, create identification and build trust. One of the fundamental contextual factors which distinguishes VTs from traditional teams is the way cues about others attitudes, intentions and behavior are transmitted. In VTs the cues might be harder to find and at least more ambiguous because they are electronically mediated. Even though one would accept the idea that in the long run people adapt to the electronic communication media (see Axtell et al., 2004) it might still be that, for example, formation of shared identity is harder, building trust takes more time and justice is perceived differently in VTs than in traditional face-to-face teams. The question whether or not the phenomena and relations found in traditional teams do persist in VTs is one general point of interest in this dissertation.

4. Methods

In this section I will summarize and explain the different datasets which were used in the four articles. The first subsection gives some further background information on the data as compared to the articles. The subsection on measures sheds light on the key measures and specifically on the arguments behind their targeting. The interested reader can look at the data and measures in further detail in the original articles.

4.1 Data and procedures

The data used in the articles was gathered by means of two large questionnaires: Virtual Team Questionnaires 1 (VTQ1) and 2 (VTQ2). They were developed for the research interests of many researchers in our Virtual and Mobile Work Research Unit and I have used only a small fraction of the variables available. VTQ1 had some similarities with VTQ2 but the differences were rather remarkable and I was able to use both data sources only in Article 3. VTQ 1 was sent to 14 teams during the years 2004 and 2005, and 230 VT members returned acceptable responses, a response rate of 59.1%. VTQ2 was sent to 31 VTs during the years 2005, 2006 and 2007, and we got 211 acceptable responses, a response rate of 71.5%. All the respondents in both datasets were specialists conducting non-routine tasks.

The basic procedure for both questionnaires and for all VTs was fundamentally similar. The respondent teams were selected in collaboration with the contact person in each company, and with the agreement of the team leaders. The minimal conditions for selection were: (a) the teams had more than one member collaborating to achieve a common goal, and (b) at least one of the team members or subgroups of them were located in different towns. In addition, it was ensured that the respondents communicated mainly via ICT (i.e., not mainly face-to-face). The team leaders were first sent a background data sheet asking for the e-mails of all the VT members, their gender, primary geographical location and nationality. This information was used when such variables as team size or the number of geographical locations were coded to the raw data. The reasoning was that the objective state of affairs affects all the team members even if not everyone responded. For instance, if a team had eight members in three locations and one of them working alone in one location failed to respond and I was interested in the effects of geographical dispersion, the count from the questionnaire would lead me to code the team erroneously as having two locations whereas the team had to cope in reality with the actual three locations.

Finally, the respondents received individual e-mails introducing the study and giving a web address through which they could confidentially complete the questionnaire. In the e-mail and in the questionnaire the respondents were reminded that they should answer all the questions with regard to their named VT. It was stressed that even though the term "team" was consistently used, they should think about the specific VT mentioned in the e-mail and on the questionnaire cover page while answering.

Article 1. In this study we use a sub-sample of VTQ1 data since the certain groups failed to meet some of the critical requirements of VTs outlined above. Three groups were dropped from this study's data because they consisted of a network of three industrial partners and had in total about 200 members. Therefore, one could hardly call them teams. The sub-sample used here consisted of 154 respondents from 11 teams working in three Finnish based IT companies. In total, 91 acceptable questionnaires were used, a response rate of 59.1 percent. Respondents were predominantly male (67.8%), with an average age of 34.6 years (*SD* = 8.2). Their mean team tenure was 12.9 months (*SD* = 9.7). We used individual responses and did not aggregate the data to team level due to small number of teams.

Article 2. The data for this study was from the early phases of VTQ2 data collection. By that time the questionnaires had been sent to 172 members of 14 VTs in seven Finnish-based companies. These companies represented different lines of business, but the majority of the data was gathered from the members of VTs in multinational IT companies (9 teams). Other areas of business included were banking, services and the metal industry. 102 acceptable questionnaires were returned, a response rate of 59.3%. The respondents were predominantly male (71.2%), with an average age of 38.5 years (*SD* = 8.1). Their mean team tenure was 24.6 (*SD* = 20.5) months. This data was also analyzed at the individual level due to the small number of teams.

Article 3. At the time this study was being finalized the data gathering had ended and we were able to complement the final VTQ2 data (31 teams) with eight teams from VTQ1. We had to exclude three more teams which had responded to VTQ1 because they had also responded to the VTQ2 later on. The teams represented 13 Finnish-based

organizations and mainly the IT industry but also such business areas as banking, services, the public sector and the metal industry. We received a total of 293 acceptable questionnaires, a response rate of 69.0%. More than half of the respondents were male (58.8%), and the average age was 39.3 years (*SD* = 8.8). Average team tenure was 22.3 (*SD* = 30.6) months. Because we were interested in team-level measurement and used such clearly team-level constructs as objective geographical distribution and the number of face-to-face meetings of the team, we aggregated the data to VT level. It could also be argued that in our study procedural justice should be treated as a team-level construct because we specifically asked for fairness perceptions of the whole VT.

Article 4. In this study we used the whole VTQ2 data. Unfortunately, trust was measured so differently in VTQ1 that we could not utilize that data. Therefore, we the used the members of 31 VTs working in ten Finnish-based organizations. The organizations were in the same areas of business as with the data of Article 3. 211 acceptable questionnaires were returned, a response rate of 71.5%. Again, a slight majority of the respondents were male (56.4%), and the average age was 40.4 years (*SD* = 8.7). Average team tenure was 25.9 (*SD* = 34.6) months. Again, because we were interested in team level measurement and used such team level constructs as trust within the whole team and perceived team effectiveness, we aggregated the data to VT level.

4.2 Measures

The key point about all the measures used in both questionnaires is that they were targeted intentionally to team level due to my personal interest and that of other developers of the questionnaires. We wanted to measure the degree to which the VT members identified with their team (see Appendix IV, Article 4, p. 32, for items). Similarly, the items measuring procedural justice were targeted to assess the quality of decision-making in the whole VT. Additional reasons for this targeting were that the respondents were specialist, non-routine employees who were probably all making important decisions and that it may have been hard to detect in e-communication who was the original or final decision maker. The procedural justice items used in Articles 1, 2 and 3 were the following:

When decisions are made in our team…

1. they are based on accurate information.
2. they can be corrected afterwards, if they are found to be poor.
3. everyone tries to suppress personal biases.
4. decisions are consistent over persons and over time.
5. all those affected by the decision are heard.

We consistently used these five items based on Leventhal (1980) but in Article 2 we broadened the operationalization by adding three items designed to assess the quality of treatment in line with reasoning of Tyler and Blader (2000) on formal and informal justice. As with the procedural justice measure, we targeted the trust measure to assess interpersonal trust within the whole VT and measured team not individual effectiveness (see Appendix IV, Article 4, p. 32, for items). This interest and the consequent targeting of the measures is a strong argument for aggregating the data to team level. Unfortunately, this was possible only for Articles 3 and 4 as explained above.

5. Results

In this Section I will describe and summarize the logic and key results of each of the four articles.

5.1 Article 1: Structural and justice antecedents of identification

In Article 1 we started to disentangle the identity dynamics of VTs by testing the main effects of three justice perceptions and four structural factors on identification with VTs. The research question here was: How are justice variables and contextually relevant structural variables related to identification with VTs (i.e., RQ I)?

From this relatively small data we were able to empirically distinguish two forms of fairness, namely procedural and interactional justice. Drawing on previous results and meta-analyses (Cohen-Charash & Spector, 2001 and Colquitt, Conlon, Wesson, Porter, & Ng, 2001, Tyler & Blader, 2000) and on the group-value model of justice of justice presented earlier (see Section 3.2.; Lind & Tyler, 1988) we hypothesized that both

procedural and interactional justice are positively associated to identification with the VTs.

For this article we selected four structural variables that could have relevance in distributed settings. The four variables were: virtuality of the team, size of the team, cultural diversity of the team and the tenure of the team members. Here we named the number of face-to-face (FTF) meetings as virtuality but, as discussed above (Section 2), the choice of this term was slightly misleading. The theoretical reasoning on the relationship between identification and all the structural variables was essentially similar. High virtuality (i.e., low number of FTF meetings), large team size and high cultural diversity should, as predicted by the SIA, decrease the salience of VTs as objects of self-categorization and consequently impede identification with them. The reverse should be true for long team tenure (see Section 3.1; Fiol & O'Connor, 2005; Haslam, 2004; Turner et al., 1987). Consequently, we suggested that virtuality, team size and cultural diversity should be negatively whereas team tenure should be positively related to identification with the VT.

The results gave strong support for both justice-identification hypotheses. These results were in line with the assumptions of the group-value model of organizational justice (Lind & Tyler, 1988) and suggest that both the quality of decision-making and the quality of interaction do, indeed, convey identity relevant information to VT members. By contrast, none of the hypothesized associations between structural variables and identification gained support. All the relationships were non-significant. However, it would be too early to conclude that the structural variables under scrutiny in Article 1 are not related to identification. It might be that the relationships are not as straightforward as we anticipated in Article 1. Furthermore, the small sample size may have prevented some relationships from becoming statistically significant. The key finding of this article was that both procedural and interactional justice perceptions are crucial in identification with VTs.

5.2 Article 2: Testing the mediation hypothesis of the group engagement model in virtual teams

Article 2 is an extension and continuation of Article 1 with a different dataset and it specifically concentrates on testing the social identity mediation hypothesis of the group engagement model (GEM; Tyler & Blader, 2003) presented in Section 3.2., thus addressing research question II. The hypothesis states that identification should mediate the relationship between procedural justice and outcome variables, especially extra-role behaviors. We defined extra-role behavior as behavior which benefits the team and/or is intended to benefit the team, which is discretionary, and which goes beyond the existing role expectations (see van Dune, Cummings, & McLean Parks, 1995).

In order to add novel aspects to the hypothesis we argued that the same mediation model could be applicable also to distributive justice. This argument is also supported by a study of De Cremer (2002), which showed that equity perceptions (which are usually and also here used to assess distributive justice) are strongly related to self-esteem and acceptance, concepts closely linked to respect, pride, and identification.

Moreover we added two structural variables to the model. First, with the same logic as in Article 1 we tested the role of the number of FTF meetings of the team in the model. Second, we tested the effects of task interdependence. Hertel, Konradt and Orlikowski (2004) identified task interdependence as a key management practice of VTs. The reasoning behind this is that the more the tasks of VT members are coupled with each other, the stronger are the demands for team members to coordinate, communicate, and cooperate. Thus, by structuring the task in an interdependent manner the management can foster collaboration within the team. This enhanced collaboration could be reflected in extra-role behaviors. When we complemented this reasoning with SCT premises (Hogg & Terry, 2001) we anticipated that the mediation hypothesis might apply also to these structural variables. The coordination needs created by strong task interdependence help VT members to perceive their VT as a salient social category with which they can identify and identification with a VT could be regarded as a powerful motivational force, which may also serve as a mediator between the structural factors and extra-role behaviors.

We found support for the mediation hypothesis for procedural justice and task interdependence. However, the results suggested that neither distributive justice perceptions nor the number of FTF meetings of the team had any association with VT identification or with extra-role behaviors. This study gave further indication that procedural justice matters in VTs. In line with Article 1 the number of FTF meetings had neither main nor mediated effects on the variables studied here. Finally, contrary to our expectations, distributive justice perceptions were neither related to identification nor to extra-role behaviors. One possible explanation for this may be that in this particular context the team members had limited power to allocate rewards and resources. Therefore, distributive justice might have had less significance for the VT members than procedural justice.

5.3 Article 3: How do face-to-face meetings and geographical dispersion moderate the relationship between procedural justice and identification?

The title of this Section is essentially research question III (see Section 1.1). In this study we wanted to take a deeper and different look at the effects of two structural variables with obvious relevance in VT. Articles 1 and 2 seemed to show that the number of FTF meetings of a VT was not related to any of the variables studied. Another structural variable which characterizes VTs but was not tested in the previous articles of this dissertation is the degree of geographical dispersion – here operationalized simply as the number of locations the team members work in (as reported by their team leaders). We took the theoretically and empirically well supported relationship between procedural justice and VT identification here for granted and concentrated on the moderating effects of the two above-mentioned structural variables.

Moreover we decided to control for team size (and check the result of Article 1) in our analyses because it has been found to be negatively related to group identification (e.g., Lipponen, Helkama, Olkkonen, & Jusslin, 2005). The results did indeed support this anticipated association.

More importantly, our two moderation hypotheses gained support. The hypotheses and results were at first glance rather counterintuitive. We anticipated and found that the fewer FTF meetings there were and the larger the geographical dispersion of the VT the stronger was the relationship between procedural justice and identification. The theoretical reasoning behind these hypotheses was based on the uncertainty management model of procedural justice (e.g., Van den Bos and Lind, 2002). According to this model people become especially sensitive to fairness perceptions under highly uncertain conditions. We adapted the uncertainty management model to VTs and got support for the idea that VT members became especially sensitive and responsive toward the quality of decision making when the frequency of face-to-face meetings was low and when geographical dispersion was high, that is when uncertainty was high. The essential finding of this article was that the virtual context contains structural elements that may profoundly shape the way that some basic group processes such as perceptions of procedural justice and group identification are related to each other.

5.4 Article 4: The interplay of trust and identification in predicting virtual team effectiveness

In Article 4 we aimed at answering research question IV and we focused on yet another variable commonly claimed to be crucial for VT success, namely trust within VTs (e.g., Jarvenpaa & Leidner, 1999). Again we omitted the investigation of main effects of trust and identification on perceived effectiveness, which was defined here as perceived task performance and coordination (see Cohen & Bailey, 1997). This choice was essentially based on rather weak evidence that either identification (see e.g., Riketta, 2005) or trust (see Dirks & Ferrin, 2001) would have main effects on team-level effectiveness. In fact, Dirks and Ferrin (2001) stress that trust should moderate the relationship between motivational constructs and group performance. Identification with a group (here a VT) is a strong motivational force which may provide the drive for group-serving behaviors, while trust helps to facilitate such behaviors because in high-trust conditions a person believes that the others are also willing to cooperate and promote the group goals. On the other hand, based on the social identity approach (e.g., Haslam, 2004) and previous research we considered that it is reasonable to expect that group identification may also

moderate the relationship between trust and (here) VT effectiveness. Even if trust would create willingness to co-operate we expected that team members might coordinate their work to accomplish group goals better when they identify strongly with their VT. In other words we theorized that in high-trust, low-identification condition the team members have a general propensity to co-operate but they may lack motivation to enact their good intentions. In the opposite condition there might be strong motivation to help the team (extra-role behaviors) but in the worst case this might not be directed towards the team's business goals. Furthermore, we controlled for team size and found again that it is negatively related to identification (as in Article 3).

The results were actually stronger than we originally expected because we did not anticipate that the effects of trust and identification on effectiveness would necessarily totally disappear at the low levels of these moderator variables. Nevertheless, this seemed to be the case for both identification and trust in our sample. These results were important if we consider the discussion on the presumed role of trust and identification as VT success factors (e.g., Aubert & Kelsey, 2003; Fiol & O'Connor, 2005). Our results indicated that these two constructs are indeed essential for high VT effectiveness. Specifically, our results provide a novel insight into the interplay of trust and identity in predicting VT effectiveness, as it seemed that that neither high-trust nor high-identification alone is sufficient in producing effectiveness – both are needed simultaneously.

6. Discussion

6.1 Summary

The main findings of this dissertation consistently stress the importance of procedural justice in the formation of VT identity. Identification with the VT was found to be crucial in producing favorable outcomes for VTs even though the effects were complex especially in the cases of identification, trust and effectiveness. Similar complexity was found to pertain to the structural variables: moderations not main effects were significant and important.

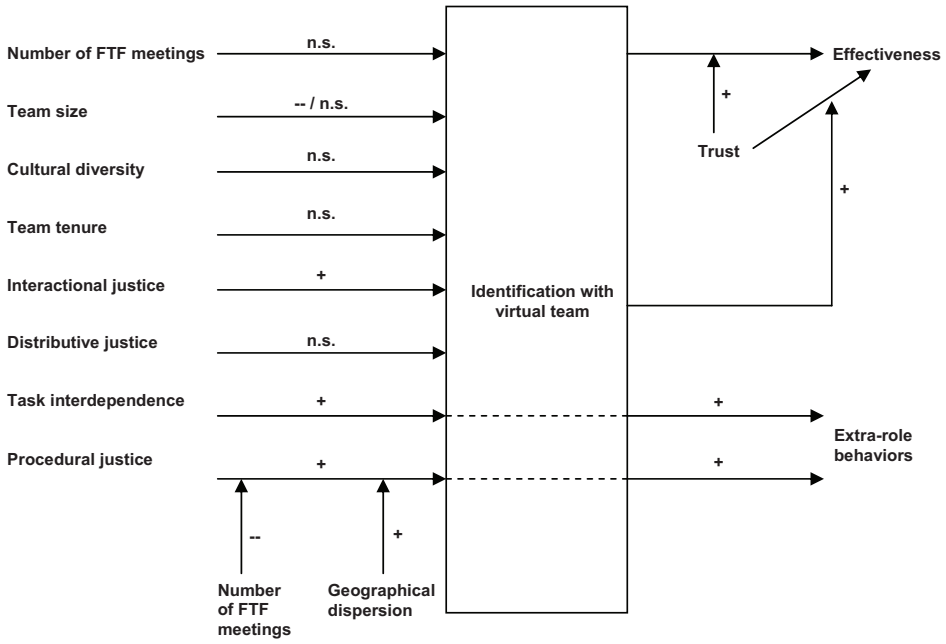

Figure 1. Summary of the results of this dissertation.
+ = positive relationship; -- = negative relationship; n.s. = non-significant relationship; the dotted line stands for full mediation

Figure 1 illustrates and summarizes the all the results presented in the original articles. Below I will present the four research questions, answers to them based on the major findings in each article and the main contributions of the respective findings.

RQ1: How are justice variables and contextually relevant structural variables related to identification with VTs? (Article 1 in Appendix I)

Main findings: Both procedural justice and interactional justice were positively related to identification whereas it seemed that none of the structural variables were associated with identification.

Main contributions: Justice perceptions are, indeed, as important antecedents of identification in VTs as they are in other settings. Justice perceptions convey identity relevant information also in the virtual context (e.g., Tyler & Blader, 2000; 2003). Furthermore, the results suggest that the relationship between structural variables and identification is not straightforward.

RQ2: Is the social identity mediation hypothesis derived from the group engagement model of justice transferable to VTs and what is the role of task interdependence? (Article 2 in Appendix II)

Main findings: The hypothesis gained support also in VTs regarding procedural justice. That is, the relationship between procedural justice and extra-role behaviors was fully mediated by identification. The same mediation model applied also to task interdependence.

Main contributions: The hypothesis derived from GEM (Tyler & Blader, 2003) was transferable to VTs, which supports the applicability of GEM in this new context. Moreover, the importance of task interdependence in VTs was confirmed (Hertel et al., 2004) but its relationship to extra-role behaviors was elaborated. This, in turn, supports reasoning on the mediating role of identification (Tyler & Blader, 2003).

RQ3: How does the number of face-to-face (FTF) meetings of the team and its geographical dispersion moderate the relationship between procedural justice and identification? (Article 3 in Appendix III)

Main findings: The fewer FTF meetings there were and the more the teams were geographically dispersed the stronger was the association between procedural justice and identification.

Main contributions: A large number of FTF meetings of the team and its high geographical dispersion seemed to be features which are typical of VTs and which are sources of uncertainty. Hence, as the uncertainty model of justice predicts, the VT members became more sensitive to procedural justice and sought cues from it in their identity formation in the high-uncertainty condition (Van den Bos & Lind, 2002). The uncertainty management model of justice was applicable to VTs in which the cues are mainly electronically mediated. To my knowledge this was the first test of these uncertainty sources.

RQ4: How do trust and identification interplay in predicting VT effectiveness? (Article 4 in Appendix IV)

Main findings: The relationship between identification and effectiveness is strong only in the high-trust condition, while in the low-trust condition the association disappears. The same applies to the reverse moderation: only in the high-identification condition does the link between trust and effectiveness exist and it is strong.

Main contributions: Both high levels of identification and high trust within the VT are needed simultaneously to predict VT effectiveness. Trust as a moderator finding supported the reasoning of Dirks and Ferrin (2001). Moreover, our SIA based reasoning on the moderator status of identification gained support. In other words, trust provides seeds for cooperation but identification is needed to target that to behaviors which produce team-level effectiveness. To my knowledge this was the first test of these interaction effects.

These studies have a clear academic novelty at least in three ways. First, theories from other contexts were tested in VTs and most of them were found to be applicable also in this new context. Second, the effects of structural variables typical of VTs were incorporated into the set-ups of the studies in order to find VT-specific effects. Arguably, such specific effects were found (Article 3) and they were anchored to existing theories. Interestingly, the results suggest that the virtual specific structural variables (e.g., number of face-to-face meeting and geographical dispersion) do not have main effects on identification and other studied variables – their importance is

revealed in moderation effects. In other words, the virtual context sets conditions to the relationships between the key variables studies here. Third, the reasoning based on the SIA and trust research gained support and insights were gained into the interplay of identity, trust and effectiveness (Article 4). Theoretically, the results were also in line with recent studies by Blader and Tyler (2009) which gave strong support to the usability of GEM in work settings and further highlight the role of social identity in mediating the effects of justice. Altogether, the findings of the four studies did shed new light on identification with VTs, the main aim of this dissertation.

Arguably, the results of this dissertation inform identification and justice research more generally. SIT was grounded on Tajfel's minimal group studies which showed that minimal social cues of belonging to a group can have meaning for individuals to such an extent that it affects their attitudes and behavior (see Tajfel & Turner, 1979). It can be argued that VTs are certain kind of modern minimal groups because the communication is mainly electronically mediated and social cues have to be largely found from this sometimes minimalistic source. The fact that correlations between procedural justice, identification and extra-role behaviors are at similar level in the samples from VTs (this dissertation) as in samples from traditional teams (see Section 3.4) suggests that effects of justice and identification are, indeed, very strong and persistent over different and even intuitively unlikely contexts. This, in turn, points a way for further research to study other boundary conditions for identity and justice dynamics. For instance, do the SIA based hypotheses get support in virtual worlds (i.e., 3D collaboration platforms)?

In terms of VT research I dare to claim that I have followed the requirements which Martins et al. (2004) set for VT researchers and which I mentioned in Section 1. In this dissertation I have drawn on the robust theoretical foundations of previous team research, considered not only main effects but also moderating and mediating effects of different variables and, arguably, found some VT-specific relationships. The question whether these are necessary or sufficient criteria of good VT research remains to be discussed.

6.2 Some critical considerations and future directions

Identity. In the studies presented in this dissertation I have used the definition of identification by Asforth and Mael (1989). As discussed briefly in Section 3.1, when Asforth and Mael (1989) formulated this definition they distanced themselves form Tajfel's (1974) original definition, especially from Tajfel's view of social identity as an emotional as well as cognitive, situational and interactional process. For almost 20 years the majority of scholars using the SIA have used identification to refer to a merely cognitive construct in the vein of Asforth and Mael's (1989) seminal article. Those in other streams of identity research, such as the proponents of the organizational identity approach, have criticized this formulation and have stressed that identification is an interactional process (see e.g., Sivunen, 2006). However, only recently even the proponents of the mainstream SIA have started to argue for broadening the identity construct. This has taken place in interesting attempts to integrate the different streams of identity research. Cornelissen, Haslam and Balmer (2007) distinguish between social identity (as applied in this dissertation), organizational identity and corporate identity. I introduced the organizational identity approach and its emphasis on internally and externally negotiated identities earlier (Section 3.1). Corporate identity, for its part, is closer to organizational identity than social identity but treats the identity construct even more symbolically than organizational identity. It views, for example, materials and artefacts as embodiments of identity. Cornelissen et al. (2007) made their article to be a manifest for cross-fertilization of these three veins of identity research. Ashforth et al. (2008) push identity scholars in a similar direction even though they have a slightly different starting point. They too favor broadening the scope of identity construct through integration of other identity research streams. Moreover, identity researchers are also ushered out of laboratories because in the field we "*are more likely to capture something more fundamental*" (Ashforth et al., 2008: 332). Finally, the sometimes blurry distinction between identification and commitment is questioned and identification is proposed to be fundamentally a situated process. It might be that the future directions of identity research depend on researchers willingness to expand their horizons.

These new openings can be seen to partially draw social identity research towards its origins (Tajfel & Turner, 1979) in terms of stressing the emotional, situational, interactional and process nature of identity and identification. The articles of this dissertation provide rather a snapshot view of identification simply because the data is cross-sectional and does not allow the scrutiny of identification as a process. That does not, however, mean that I would consider social identity as a purely cognitive construct. I have situated it within a new organizational form, that is VTs. Moreover, I find it hard to believe that social identity would have any motivational power if it did not have emotional significance to individuals, as Tajfel (1974) pointed out. Furthermore, I welcome the emergent attempts at cross-fertilization in identity research but I have stuck to the SIA in this dissertation in order to stay focused.

Justice. Another important pursuit of this dissertation is the measurement and investigation of most variables, especially justice, at VT-level. In justice research this is not very common because usually justice perceptions are considered to be individual ones (Li & Cropanzano, 2009) and very often the quality of leaders' decision-making is the focus of studies (Van Knippenberg & De Cremer, 2008). However, the concept of justice climate might be used to argue for my choice of level. I have discussed my choice in Section 4.2 in terms of practical reasons: The specialists constituting the VT probably make many important decisions themselves and the leader is not always at the center. Moreover, the origins of any decision may be harder to trace in a virtual and e-communication dependent context than in co-located settings. Specifically, the concept of intra-unit justice climate can be used to support the team-level measurement of justice (Li & Cropanzano, 2009). It refers to the quality of decision-making and treatment in a team. Li and Cropanzano (2009) note that it has been shown to predict work attitudes and behaviors. Another argument for consistent use of team-level constructs comes from the social identity literature. For example, the findings of Riketta and Van Dick (2005) support the so-called "identity matching principle" (see also Ashforth et al., 2008). The principle states that a certain focus or level of identification has stronger correlations with variables at this same level than with variables at other levels. For instance, VT-level identification should be more associated to VT-level justice judgments than the justice judgments of the team-leader (an individual).

Unfortunately, the small sample sizes allowed us to aggregate the data to VT-level only in Articles 3 and 4.

Trust. In Article 4 we followed Boon and Holmes (1991) and defined trust as a psychological state. The definition, in turn, was reflected in the measure we used (see Appendix IV, Article 4, p. 32, for items). This definition and operationalization, underlining the attitudinal nature of trust, would certainly be criticized by those trust researchers who emphasize that trust is a behavioral intention and that the attitudes preceding this kind of trust should be called trustworthiness (see e.g., Mayer, Davis & Schoorman, 1995). If I were to start the data collection now, I would certainly choose a more fine-grained conceptualization and measure.

Virtual team research. Identification and trust have been studied to some extent in VTs, whereas justice was for some peculiar reason almost totally neglected before this dissertation. A point of interest here is that there is some notable variance on what is meant by identification and trust in VT studies. Wiesenfeld et al. (1999) talk about organizational identification but measure it with Mael and Ashforth (1992) scale, which stems from the social identity research tradition. Mortensen and Hinds (2001) and Bartel et al. (2007) seem to conceptualize and measure identification consistently in terms of the social identity tradition, whereas in Sivunen's (2006) qualitative study the conceptualization of identification stresses it as a communicative process. The situation in trust research on VTs is similar. Aubert and Kelsey (2003) and Zolin et al. (2004) use consistently the Mayer et al. (1995) conceptualization and measure of trust. Still, in their seminal qualitative study Jarvenpaa and Leidner (1999) discuss several views of trust but end up arguing that their results are best explained by the concept of swift trust (see Section 3.3; Meyerson et al., 1996). Furthermore, Geister, Konradt and Hertel (2006) conceptualize trust to be one dimension of a motivational construct. These partial inconsistencies hinder the comparability of research results. The strength of this dissertation is that the same SIA based conceptualization and measure of identification have been used in all four articles. As noted above, unfortunately, the same can not be said in the case of trust. Nevertheless, future VT research clearly needs more conceptual clarity.

Limitations. This dissertation has many limitations worth mentioning. In the articles we have used only cross-sectional methodology, which does not lend itself to the inference of causality. Still, in many instances I have used causal terms, such as predictor and antecedent, for the sake of simplicity. Longitudinal (or laboratory) settings should be used in order to determine the causal order of the studied attitudinal variables. Moreover, all key attitudinal variables used in this dissertation were based on self-reports and, therefore, the results are vulnerable to common method variance. However, the aggregation, when possible, of the self-report measures to the VT-level and the use of team-level data reduced the likelihood that response biases would explain our findings (Ambrose and Schminke, 2003). The fact that in Articles 3 and 4 we concentrated on statistical interactions and that these were significant, gave us good reason to believe that our results are not merely artificial products of common method variance (Ambrose and Schminke, 2003; Evans, 1985). Furthermore, identification could be considered to be a process (Tajfel, 1974; Ashforth et al., 2008) and cross-sectional methodology captures only one moment of it. Therefore, longitudinal settings would be beneficial in promoting a more reliable and deeper understanding of identification with VTs (see Sivunen, 2006). Finally, small samples forced us to study a rather limited number of variables and prevented the preferred aggregation of the data to team level in Articles 1 and 2.

The above methodological limitations underline the importance of longitudinal set-ups and the use of multiple data sources. However, these rather common arguments might be seen as carrying a quantitative bias. Do three snapshots from same population constitute a thorough view of the identification process? Obviously, we should appreciate also the importance of qualitative research. It is useful to recall, for instance, that Jarvenpaa and Leidner's (1999) seminal study of trust in VTs was based on longitudinal qualitative data. Moreover, since we are interested in disclosing potentially unique phenomena in a relatively new and understudied environment, the starting point might rather be ethnographic-type of investigation than surveys. How can we develop valid quantitative measures and ground them on potentially context-specific theoretical formulations (see Martins et al., 2004) if we do as I have done and keep on using measures developed for other environments? These considerations might be critical for

future research into VTs if we really do consider VTs to be qualitatively different from traditional work teams. This is yet another fundamental question and much depends on what stance researchers take on that in the future. My stance here follows the thinking of Vartiainen (2006), who strives to identify structural features common to VTs that can be presumed to make the context more complex than in co-located teams. In this dissertation, the use of such features as geographical dispersion and lack of FTF meetings seemed to produce in some cases counterintuitive but at best VT-specific results (Article 3).

6.3 Conclusion

Despite the above-mentioned limitations and considerations this dissertation has contributed to identity research in VTs. Moreover, it has answered the call for more research in real working-life situations. Perhaps most importantly, the studies suggested strongly that justice perceptions and especially procedural justice do matter for identification with VTs. Procedural justice was consistently found to be closely and positively related to identification and it is indeed an important source of identity relevant information in VTs. Moreover, the uncertainty produced by lack of FTF meetings and geographical dispersion in VTs made team members highly sensitive to procedural fairness. Identification with the VT, in turn, was found to provide the motivational force that mediated the effects of procedural justice on the extra-role behaviors of VT members. Finally, strong VT identification combined with a high level of interpersonal trust was found to be the key to VT effectiveness. Theoretically, the social identity approach and related group engagement model of justice proved their applicability to virtual settings. However, further studies are needed to substantiate and elaborate the findings and arguments put forward in this dissertation.

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